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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/815,724
Filing Date: April 02, 2004
Appellant(s): MOTTIER ET AL.

Kurt Berger
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 01/12/2009 appealing from the Office action mailed 11/12/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2003/0123384 A1	Agee	7-2003
7,286,593 B1	Banerjee	10-2007
2005/0018641 A1	Zhao et al	1-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co.**, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: (See *MPEP Ch. 2141*)

- a. Determining the scope and contents of the prior art;
 - b. Ascertaining the differences between the prior art and the claims in issue;
 - c. Resolving the level of ordinary skill in the pertinent art; and
 - d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.
2. Claims 1 and 3-7, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agee (US 2003/0123384 A1) in view of Banerjee (US 7,286,593 B1) and Zhao et al. (Zhao herein after) (US 2005/0018641 A1).

Re Claims 1 and 7, Agee discloses a method and apparatus for transmitting data in a telecommunication system that includes at least a first transceiver (base 11, Figure 1) and a second transceiver (remote 17, Figure 1) linked together by means of at least one communication channel, at least one of the transceivers being mobile, the method comprising:

spreading said data over a plurality of components (spread transmit data, Figure 8); and

an equalization step of multiplying the components resulting from the spreading step by a corresponding predetermined equalization value representative of communication conditions within the communication channel (delay, Doppler preemphasis 280, delay Doppler estimator 273, delay, Doppler equalize 274, Figure 9, the multiplication of spreading code after the multiplication of the equalization coefficient

is functional equivalent to the multiplication of coefficient after spreading code), except detail disclosure of the equalization equations.

However, Banerjee discloses a system and method for channel estimation for determining channel weighting coefficients, wherein at least one predetermined equalization value is determined so as to account for a Doppler effect resulting from a movement of the mobile transceiver (abstract, column 6 lines 21-30), which adversely affects the communication conditions within the communication channel, wherein each predetermined equalization value (column 7 lines 53-62) is calculated using an equation (column 8 line 20) that includes a parameter representative of a noise level in said communication channel (column 7 line 9 – column 8 line 49) and an additional noise variance (column 10 lines 20-63).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to utilize the channel estimation as taught by Banerjee with the communication system as taught by Agee to further improve the performance of channel estimator to compensate Doppler Effect and improve SIR level.

Agee teaches a method and apparatus for transmitting data in a telecommunication system with channel equalization. Banerjee teaches channel weighting coefficients caused by additive noise and variation in the channel (Doppler effects) except detail disclosures of a particular noise variance representative of said Doppler effects. However, Zhao further discloses a method and an apparatus for adjusting an average interval of channel estimation dynamically based on Doppler-shift wherein each predetermined equalization value ([0018]) is calculated using an equation

(Equation 4 5 6 7) that includes a parameter representative of a noise level in said communication channel and an additional noise variance representative of said Doppler effect ([0018]-[0022]).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to incorporate the method as taught by Zhao with the communication system as taught by Agee to overcome the tracking of the speed of a mobile terminal.

Re Claims 3 and 9, the combined teachings discloses the method and apparatus as claimed in claim 1 and claim 7, wherein Agee teaches the communication conditions within the communication channel are modeled by means of a study of the effects of said conditions on at least one incoming signal previously received by the mobile transceiver through said communication channel ([0119]-[0124]), except the disclosure of detail noise parameter.

However, Banerjee discloses the additional noise variance representative of said Doppler effect increases with an amount of time elapsed since said incoming signal has been received by the mobile transceiver (column 7 line 53 – column 8 line 49, column 10 lines 1-63).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to utilize the channel estimation as taught by Banerjee with the communication system as taught by Agee to further improve the performance of channel estimator to compensate Doppler Effect and improve SIR level.

Zhao discloses a method and an apparatus for adjusting an average interval of channel estimation dynamically based on Doppler-shift wherein the additional noise variance representative of said Doppler effect increases with an amount of time (Equation 1) elapsed since said incoming signal has been received by the mobile transceiver ([0014]-[0022]).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to incorporate the method as taught by Zhao with the communication system as taught by Agee to overcome the tracking of the speed of a mobile terminal.

Re Claims 4 and 10, the combined teachings discloses the method and apparatus as claimed in claim 1 and claim 7, wherein Agee teaches the communication conditions within the communication channel are modeled by means of a study of the effects of said conditions on at least one incoming signal previously received by the mobile transceiver through said communication channel ([0119]-[0124]), except the disclosure of detail constant variance.

However, Banerjee discloses the additional noise variance representative of said Doppler Effect is a constant variance whose value has been averaged over a time interval between two successive incoming signals (column 7 line 53 – column 8 line 49, column 10 lines 1-63).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to utilize the channel estimation as taught by Banerjee with the

communication system as taught by Agee to further improve the performance of channel estimator to compensate Doppler Effect and improve SIR level.

Zhao discloses a method and an apparatus for adjusting an average interval of channel estimation dynamically based on Doppler-shift wherein the additional noise variance representative of said Doppler Effect is a constant variance whose value has been averaged over a time interval between two successive incoming signals ([0014]-[0022]).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to incorporate the method as taught by Zhao with the communication system as taught by Agee to overcome the tracking of the speed of a mobile terminal.

Re Claims 5 and 11, the combined teachings discloses the method and apparatus as claimed in claim 1 and claim 7, wherein Agee teaches the equalization step is performed by the mobile transceiver on components of a signal to be transmitted by said mobile transceiver ([0104]-[0106], Figure 9).

Re Claims 6 and 12, the combined teachings discloses the method and apparatus as claimed in claim 1 and claim 7, wherein Agee teaches the equalization step is performed by the mobile transceiver on components of a signal received by said mobile transceiver ([0104]-[0106], Figure 9).

(10) Response to Argument

Applicant's argument: "Applicants respectfully submit that a prima facie case of obviousness has not been established and the rejection of Claim 1 (and all similarly rejected dependent claims) should be withdrawn."

Examiner's response: In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the primarily reference Agee discloses a spread spectrum communication system utilizing Doppler estimator and equalizer to recover and correct received communication signal. Banerjee and Zhao further disclose detail information regarding channel estimation for spread spectrum communication system in additive noise and Doppler effects. Banerjee teaches channel estimation with channel weighting coefficients caused by additive noise and variation in the channel (Doppler effects), further teaches the noise variance in channel estimation. However, Banerjee does not disclose the noise variance representative of Doppler effects explicitly. Zhao teaches channel estimation incorporates Doppler-shift and noise having additional noise variance

representative of Doppler effects to further describe equalization value is calculated using equation that includes a parameter representative of a noise level and an additional noise variance representative of Doppler effects. Therefore, it would have been obvious to one skilled at the time the invention was made to further utilize channel estimation with Doppler effects as taught in Banerjee and Zhao to improve received signal quality and optimal receiving performance.

Applicant's argument: "Regarding the rejection of Claim 1 under 35 U.S.C. §103(a), the Office Action asserts that the '384 application discloses everything in Claim 1 with the exception of detailed disclosure of the equalization equations, and relies on the '593 patent and the '641 application to remedy that deficiency. Applicants note that the outstanding Office Action relies on the newly cited '641 application in its rejection of Claim 1. However, Applicants note that page 4 of the outstanding Office Action does not indicate what the deficiencies are in the teachings of the '384 application and the '593 patent with respect to the limitations recited in Claim 1. Thus, it is not clear to Applicants what limitation the '641 application is being relied upon as disclosing. Applicants request that, in any future Office Action, the Office Action clearly indicate what each reference is relied upon to teach. Further, as stated in previous remarks, Applicants respectfully request that the Examiner identify the additional noise variance representative of the Doppler effect, as recited in Claim 1. In the present rejection, the Office Action refers to four different equations in the '641 application, but does not specifically identify how the '641 parameters are read on the parameters recited in Claim 1. Thus, it is unclear to

Applicants exactly which parameters disclosed by the '641 application the Examiner is reading on the claimed parameters."

Examiner's response: Agee teaches the claimed method and apparatus for spread spectrum communication system with channel estimation except the specific detail disclosure of each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level in said communication channel and an additional noise variance representative of said Doppler effect. Zhao discloses a channel estimation method and apparatus which estimates instantaneous channel coefficient includes a parameter representative of a noise level and noise variance representative of Doppler effects. Equations 3-7 of Zhao disclose closely related equations that disclose the claimed limitation, "each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level in said communication channel and an additional noise variance representative of said Doppler effect". The window length P that includes variance of Gaussian White Noise disclosed in Equation 7 and estimated white noises are part of estimated instantaneous channel coefficient in Equations 3 and 4. Therefore, the combined prior arts reasonably interpret the claimed limitations.

Applicant's argument: "Moreover, Applicants note that the '384 patent fails to explicitly disclose multiplying components resulting from a spreading step by corresponding predetermined equalization values, as required by Claim 1. Rather, the

'384 application discloses a "delay, Doppler pre-emphasis unit" 280, but does not provide details of how this unit operates. For example, the '384 application does not disclose that multiplication of components by predetermined equalization values is performed by the "delay, Doppler pre-emphasis unit" 280. In this regard, Applicants note that page 3 of the outstanding Office Action implies that the operation of the "delay, Doppler pre-emphasis unit" 280 is functionally equivalent to the claimed multiplication of spread components by equalization values, but does not offer any evidence as to why they are equivalent. As discussed above, the '384 application does not disclose how the "delay, Doppler pre- emphasis unit" 280 operates and there is no disclosure of multiplication of components by equalization values, as required by Claim 1."

Examiner's response: In response to applicant's argument that Agee does not explicitly disclose multiplication of components by equalization values. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Agee discloses a transceiver that receives spread spectrum signal applying despreader weight and delay Doppler equalization factor on the receiver side and transmits spectrum signal applying delay Doppler equalization factor and spreader weight on the transmitter side. Banerjee discloses channel weighting coefficients (equalization value) caused by additive noise (noise level in said communication channel) and variation in

the channel (Doppler effects) (additional noise variance) wherein Figure 3 discloses multiplication is utilized for applying despreader weight and weighting coefficient. It is clear to one skilled in the art at the time the inventions was made to utilize the teaching as taught by Banerjee to describe how the coefficients apply to the signal by multiplication and Agee teaches that the same processing steps apply to both transmitting and receiving to compensate Doppler effect.

Applicant's argument: "Applicants respectfully submit that the '593 patent teaches away from using an additional noise variance representing the Doppler effect, as required by Claim 1."

Examiner's response: In response to applicant's argument that Banerjee is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). Furthermore, "[t]he prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed" *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). In this case, Banerjee discloses a channel estimator for determining channel weighting coefficients for spread spectrum communication system. The prior art

reference is in the field of applicant's endeavor and is reasonably pertinent to the Doppler estimation which the applicant was concerned.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/KENNETH LAM/

Examiner, Art Unit 2611

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